

# Maine Sea Grant College Program

Site Review • 7-8 October 2014 • The University of Maine • Orono, ME

## Briefing Book



*NOTE: A supplement to materials already provided by the National Sea Grant Office, this briefing book complements the information provided during the site review team's visit to Maine. For this 2014 review, we have chosen to organize our presentation based on how we work. The briefing book and the site visit presentations will both be organized around our operational methods and philosophies.*

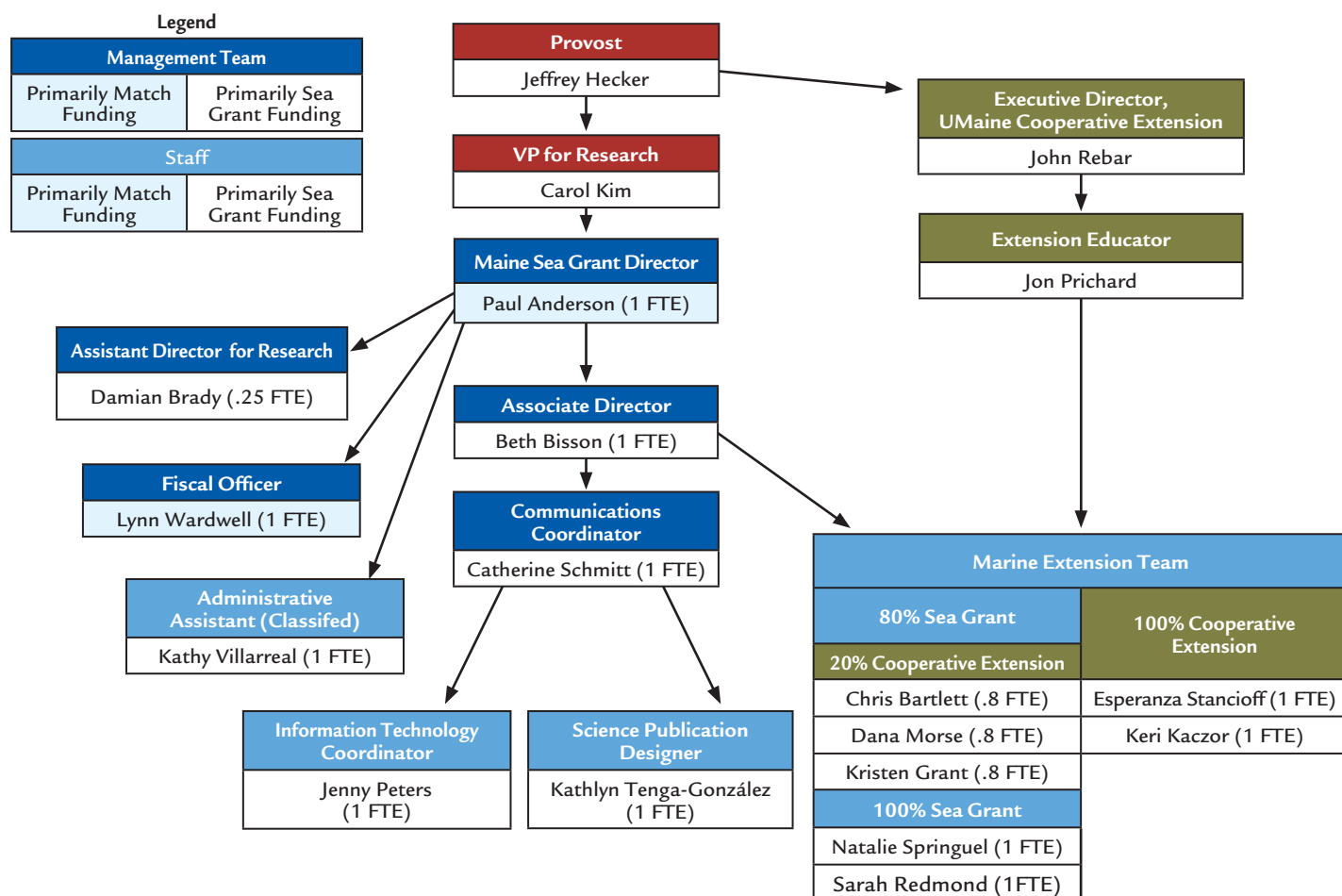
## Program Management & Organization

Leadership of Maine Sea Grant is provided by a management team of five individuals based in the Orono office:

- Paul Anderson (Director)
- Lynn Wardwell (Fiscal Officer)
- Beth Bisson (Associate Director and Extension Team Leader)
- Catherine Schmitt (Communications Coordinator)
- Damian Brady (Assistant Director for Research)

The team meets regularly to discuss new programmatic initiatives, consider proposals for program development funds, provide strategic direction, and cultivate opportunities for program growth, new partnerships, and initiatives in emerging issue areas. The Management Team participates in budgetary decisions and advises staff on external funding proposals. The Research Coordinator, an assistant research professor from the University of Maine School of Marine Sciences, manages the biennial research competition, program development proposal solicitation and review, and routine communication with prospective and funded investigators and their students.

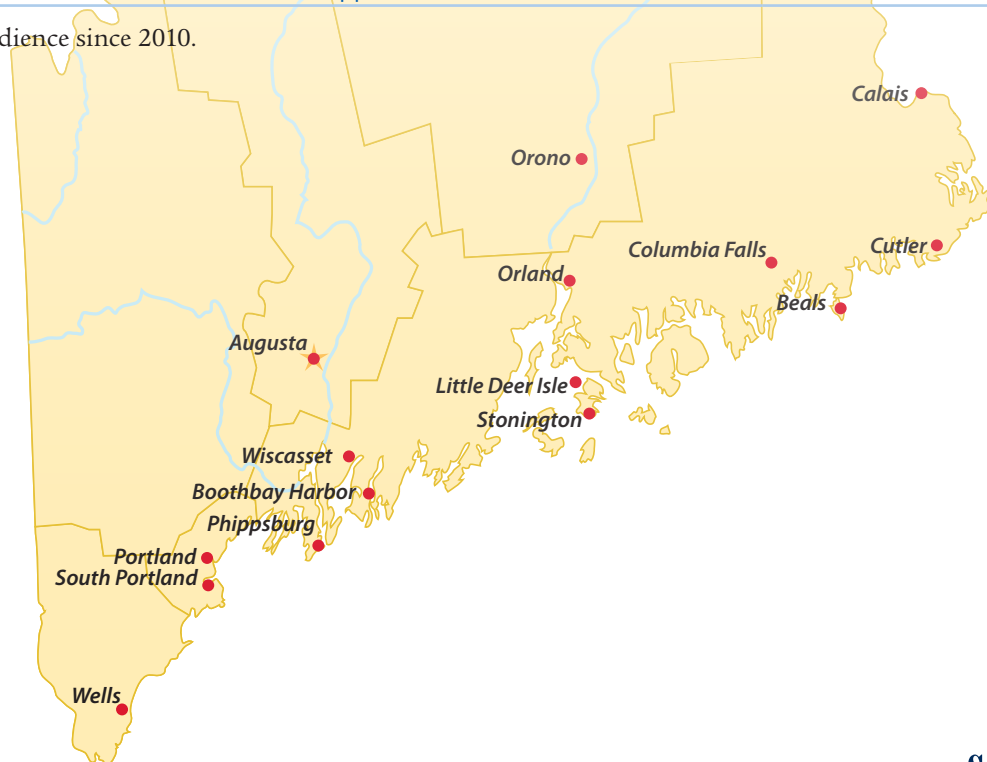
The Management Team is the primary interface with Maine Sea Grant's Policy Advisory Committee (PAC), who provide input to strategic planning, programmatic direction, and funding decisions. Members are nominated by committee, appointed by the University of Maine President, and serve renewable three-year terms. The PAC meets twice a year in rotating locations. Meetings are often hosted by committee members, and provide opportunities for members to hear from Sea Grant staff, partners, or researchers about current projects, or conduct field trips to project sites and staff host institutions. PAC members serve on committees for planning events such as the biennial Research Symposium as well as pre-proposal review committees. As representatives of diverse stakeholder interests, PAC members work closely with Maine Sea Grant staff to evaluate opportunities and gaps in research and programming, identify and articulate goals and expected outcomes, set priorities, and provide feedback on each new strategic plan and omnibus proposal.



## Maine Sea Grant Policy Advisory Committee

Robin Alden	Director, <a href="#">Penobscot East Resource Center</a>	Stonington
Fei Chai	Director, <a href="#">UMaine School of Marine Sciences</a>	Orono
Dick Clime	Project Developer, <a href="#">Coastal Enterprises, Inc.</a>	Wiscasset
Paul Dest	Director, <a href="#">NOAA Wells National Estuarine Research Reserve</a>	Wells
Paul Dobbins*	Co-founder, <a href="#">Ocean Approved, LLC</a>	Portland
Judy East	Director, <a href="#">Washington County Council of Governments</a>	Calais
Don Hudson	President Emeritus, <a href="#">Chewonki Foundation</a>	Wiscasset
Chris Johnson	Co-chair, <a href="#">Maine Legislature Marine Resources Committee</a>	Orono
Carol Kim	<a href="#">Vice President for Research, UMaine</a>	Orono
Alvion Kimball*	Owner, <a href="#">Orland House Bed &amp; Breakfast</a>	Orland
John Kocik	Chief, <a href="#">NOAA National Marine Fisheries Service, Orono Field Station</a>	Orono
Walter Kumiega	Co-chair, <a href="#">Maine Legislature Marine Resources Committee</a>	Little Deer Isle
Kathleen Leyden	Director, <a href="#">NOAA Maine Coastal Program</a>	Augusta
Glen Marquis*	Project Development Manager, <a href="#">Ocean Renewable Power Company</a>	Portland
Linda Mercer	Director, <a href="#">Bureau of Marine Science, Department of Marine Resources</a>	Augusta
Pam Parker	<a href="#">Maine Department of Environmental Protection</a>	Phippsburg
Kristan Porter*	President, <a href="#">Maine Fishermen's Forum</a>	Cutler
Jon Prichard	Associate Professor, <a href="#">UMaine Cooperative Extension</a>	Orono
Cathy Ramsdell	Director, <a href="#">Friends of Casco Bay</a>	South Portland
Dwayne Shaw*	Director, <a href="#">Downeast Salmon Federation</a>	Columbia Falls
Graham Shimmield	Director, <a href="#">Bigelow Laboratory for Ocean Sciences</a>	Boothbay Harbor
Susan Swanton	Director, <a href="#">Maine Marine Trades Association</a>	Portland
Steve Von Vogt*	Director, <a href="#">Maine Composites Alliance</a>	Portland
Philip Yund*	Senior Scientist, <a href="#">Downeast Institute for Applied Marine Research &amp; Education</a>	Beals

\*Represents a new stakeholder audience since 2010.



## Recruiting Talent

Maine Sea Grant runs an open research competition every two years. Throughout the process, we are careful to avoid and manage conflict of interest. With the exception of federal employees, anyone is eligible to apply.

In January or February of the year prior to funding, a request for pre-proposals is issued for research that will contribute to the stakeholder-driven goals of the local, regional, and national Sea Grant strategic plans. We keep our research calls open for proposals that align with any of our strategic plan goals (and therefore align with extension and education programs), rather than focusing on particular research questions or topic areas, because Maine is small state with a limited number of research institutions. We have learned that the best way to fund the highest quality, relevant, and timely research is to give potential investigators this freedom, and to rely on scientific peer reviews and multi-disciplinary technical review panels.

1. The call for proposals is posted on our website and distributed via email and social media to all research institutions in Maine and networks of Sea Grant staff and advisors.
2. Pre-proposals are reviewed by a panel of in-state stakeholders (including some members of our Policy Advisory Committee), and evaluated based on relevance to contemporary coastal issues. We invite a subset back as full proposals.
3. A minimum of four anonymous scientific peer-reviews is solicited for each full proposal, to which investigators have the opportunity to respond.
4. A technical panel of experts in relevant fields from outside Maine convenes in the fall to evaluate the proposals, peer reviews, and rebuttals, and to recommend projects for funding.

## Compositions of review panels

	Pre-Proposal (Stakeholder) Review Panel		Full Proposal (Technical) Review Panel	
2012	Scott Hall	Audubon Seabird Restoration Program	Michael Rice	University of Rhode Island
	Ted Ames	Penobscot East Resource Center	Cory Riley	NOAA Cooperative Institute for Coastal and Estuarine Environmental Technology
	Andrew Fisk	Department of Environmental Protection	Jeff Seewald	Woods Hole Oceanographic Institution
	Meredith Mendelson	Sea Grant/Knauss Alumna	Jeremy Collie	Rhode Island Graduate School of Oceanography
	Linda Mercer*	Department of Marine Resources	Kevin Stokesbury	University of Massachusetts
	Jessica Muhlin	Maine Maritime Academy		
	Dana Rice	Town of Gouldsboro		
	Graham Shimmield*	Bigelow Laboratory for Ocean Sciences		
	Susan Swanton*	Maine Marine Trades Association		
	Kristen Grant	Maine Sea Grant / Cooperative Extension		
2014	Bob Baines	Lobster Advisory Council	J. Evan Ward	University of Connecticut
	Beth Bisson	Maine Sea Grant	Michael Pilson	University of Rhode Island
	Steve Cole	Coastal Enterprises, Inc.	Jonathan Grabowski	Northeastern University
	Don Hudson*	Maine Sea Grant Policy Advisory Committee	Andrea Battison	Prince Edward Island lobster scientist
	Zack Klyver	Bar Harbor Whale Watch	Theodore Castro-Santos	U.S. Geological Survey
	Kathleen Leyden*	Maine Coastal Program		
	Linda Mercer*	Department of Marine Resources		
	Lauren Sahl	Maine Maritime Academy		
	Rob Snyder	Island Institute		
	Charles Tilburg	University of New England		

\*PAC member



Maine Sea Grant's last two research competitions have generated pre-proposals from 17 institutions, 11 of which are new since 2010. This expansion represents a significant proportion of Maine's marine science community. Four new investigators have received research grants. At the same time, by supporting successful continuing investigators, we have been able to achieve longer-term impacts in particular topic areas, such as research related to juvenile and adult lobster survey methodology, and seaweed aquaculture infrastructure and product development.

Like many other institutions supporting scientific research, Maine Sea Grant has seen an increase in the number of funding proposals submitted over the past four years. We suspect this increase is due to declines in funding from other sources. This underscores the value of Sea Grant's targeted research pool, and has prompted a series of ongoing discussions with our Policy Advisory Committee and other Sea Grant programs about ways we could reconfigure our current process to support a greater number of research projects with limited funds.

Maine Sea Grant administers a small pool of program development funds (\$35,000 direct funds per year). We review proposals three times per year, however we often make decisions on time-sensitive proposals between review cycles. Development projects are funded in the range of a few hundred dollars to \$10,000, although most are less than \$5,000. Development awards have proven to be a very effective means of initiating research projects and establishing partnerships to leverage funds and effort. An example of the effectiveness of these funds is offered by UMaine's Dr. Laurie Connell, who received \$3,840 in Program Development funds to track *Alexandrium* ("red tide") abundance. Preliminary results indicated a correlation between cell counts and shellfish toxicity. Connell leveraged these results for a \$574,028 grant from NOAA to validate a tool for predicting harmful algal blooms in coastal waters.

Descriptions of current and completed research and program development projects are hosted on our website ([seagrant.umaine.edu/research](http://seagrant.umaine.edu/research)) and updated regularly.

Maine Sea Grant also supports a variety of education and professional training programs that help recruit and retain a workforce skilled in disciplines critical to the ecological health, economic vitality, and resilience of Maine's coastal communities and ocean resources. Our research and program development funding criteria favor meaningful involvement of K-16 and graduate students, and our education and citizen science programs involve stakeholders of all ages in research and stewardship. Marine Extension Team activities typically include support for graduate and undergraduate students in addition to providing professional training to stakeholders. For example, the recent Trade Adjustment Assistance program for the American lobster industry provided business training to thousands of New England lobstermen.

Workforce development opportunities for undergraduate and graduate students include the Maine Sea Grant Scholar program, initiated in 2011, through which we support a student's first year in UMaine's dual master's degree program in marine policy and science. For undergraduate students working on marine and coastal issues, we recently expanded Maine Sea Grant's Undergraduate Scholarship Program through a new partnership with public and private undergraduate institutions throughout the state. Five schools agreed to participate in the program in 2013, committing to matching \$500 in Sea Grant scholarship funding for any successful applicant from their own institution. Scholarship funds may be used for academic research, tuition, professional development, or other academic expenses related to awardees' marine or coastal studies. Ten award recipients were announced in May 2014, and we expect to expand to additional institutions and grow the pool of available scholarship funding over time. In addition to financial support, we coordinate and host a number of opportunities each year for our "family" of Sea Grant-supported students and interns to meet one another and participate in research symposia, conferences, and other professional development opportunities.

	2012	2014
<b>Pre-Proposals (Institutions Represented)</b>	27 (9)	47 (14)
<b>Full Proposals (Institutions Represented)</b>	12 (3)	15 (8)
<b>Funded Proposals (Institutions Represented)</b>	5 (2)	5 (3)*
<b>New PIs</b>	2	2
<b>New Institutions</b>	0	0
<b>Success of Home Institution</b>	40%	20%

\*includes project funded with additional "minibus" funding



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## Stakeholder Engagement

The broadest definition of Maine Sea Grant stakeholders includes all residents and visitors in Maine. Within these populations are multiple audiences with whom we frequently work, and for whom we develop products, programs, and services:

- Commercial fishermen and aquaculturists (primarily state-managed fisheries)
- State natural resource agency leaders and staff
- Municipal officials
- Maine citizens, property owners, and communities
- K-16 educators and students
- Tourism-related businesses and organizations
- State legislators
- Nonprofit organizations
- Academic research institutions, researchers, and graduate students


Members of our Policy Advisory Committee serve as representatives of, and liaisons to, these stakeholder audiences. We engage stakeholders directly and through our PAC in different ways, based on assessment of need and communication preferences, and the nature and content of individual projects or programs. Stakeholders are not merely passive audiences for our activities, however, but often become partners in ongoing projects and initiatives.

Maine Sea Grant rarely does anything on our own, as illustrated by the list of partners provided separately from this briefing book. Demand for our partnership is high, and when entering new partnerships we carefully consider our own role and capacity to be effective. This has resulted in resilient partnerships and a reputation for productive collaboration that leverage far greater expertise and funding, and facilitate far greater outcomes than we could accomplish on our own.




**Our primary means of engaging stakeholders is through the Marine Extension Team (MET), because of their geographic distribution and diversity of expertise. The MET is a formal partnership with the University of Maine Cooperative Extension.**


### Chris Bartlett

Years with Sea Grant	19	
Location	Marine Technology Center, Eastport	
Boards & committees	Board of Directors, Downeast Institute for Applied Marine Research and Education Chair, Eastport Port Authority Harbor Committee	
Areas of expertise	seafood, finfish aquaculture, renewable ocean energy, ornithology	
Primary audiences	fishermen, aquaculturists, Washington County communities, tourists, K-16	
Recent research	Rainbow smelt population assessment (DMR and Downeast Salmon Federation); Fishing community resilience (UMaine/Sea Grant); Fish and bird interactions with tidal power (Ocean Renewable Power Company).	
Network activities	National Weather Service Mariner Survey NOAA/Coast Guard Fishing Safety	

### Sarah Redmond

Years with Sea Grant	2	
Location	University of Maine Center for Cooperative Aquaculture Research, Franklin	
Boards & committees	Maine Seaweed Council Rockweed Management Plan Development Committee Maine Seaweed Scene & Festival Planning Committee	
Areas of expertise	seafood, wild and cultured marine macroalgae (seaweed or sea vegetables), food systems	
Primary audiences	wild harvest and cultured seaweed industry, consumers, K-16	
Recent research	Supporting sea vegetable aquaculture in Maine (UMaine/Sea Grant), Adding value to the sea urchin fishery (UMaine/Sea Grant), Aquaculture in Shared Waters (NOAA Sea Grant), The development of sustainable, multi-seasonal multi-species, marine algal aquaculture in coastal Maine (NOAA-SBIR), Sustainable Ecological Aquaculture Network (NSF EPSCoR)	
Network activities	Seaweed aquaculture outreach (CT Sea Grant); NOAA Sea Grant research exchange with South Korea (National Fisheries Research and Development Institute)	

### Natalie Springuel

Years with Sea Grant	14	
Location	College of the Atlantic, Bar Harbor	
Boards & committees	Coordinator, Working Waterways and Waterfronts National Symposium on Water Access, Portland, Maine, 2010 Co-founder and Chair, National Working Waterfront Network Town of Bar Harbor Marine Resources Committee Chair, Downeast Fisheries Trail Planning Committee Maine Association of Sea Kayak Guides and Instructors Washington County Community College Adventure Recreation and Tourism Advisory Committee	
Areas of expertise	natural resource-based and heritage tourism, fisheries history, coastal access and working waterfronts, recreational boating	
Primary audiences	tourism, fishing, and aquaculture industries; tourists and recreationists; eastern Maine communities; working waterfront stakeholders in Maine and nationwide	
Recent research	Creating community and economic development tools for preserving working waterfronts and waterways (U.S. Economic Development Administration), Legal aspects of incorporating tourism with fisheries and aquaculture (National Sea Grant Law Center)	
Network activities	Sea Grant Coastal Community Development Network Downeast fisheries then and now: strengthening community connections to the sea (NOAA Fisheries, NOAA Preserve America)	



### Keri Kaczor

Years with Sea Grant	9
Location	Knox-Waldo County Extension Office, Waldoboro
Boards & committees	Maine Beaches Conference Steering Committee UMaine Cooperative Extension Professional Committee Knox-Lincoln Counties Extension Association Vision Committee
Areas of expertise	water quality, pollution identification and remediation, beaches
Primary audiences	beach managers, municipal officials, tourists, recreationists
Recent research	To address the scientific deficiencies of the beach monitoring assessment and notification system, Kaczor has engaged researchers from Maine Geological Survey, EPA Region 1, University of Maine at Fort Kent, University of New Hampshire, and Woods Hole Oceanographic Institution in studies of pollution sources, pathways, and remediation methods.
Network activities	NOAA Citizen Science Community of Practice Sea Grant PPCP Working Group Maine Coastal Observing Alliance



### Esperanza Stancioff

Years with Sea Grant	26
Location	Knox-Lincoln County Extension Office, Waldoboro
Boards & committees	Coordinator, Maine Climate Change Adaptation Providers Network Co-Chair, National Sea Grant Climate Network Co-Chair, Regional Sea Grant Climate Network Northeast Coastal Acidification Network Steering Committee Gulf of Maine Council Environmental Science Indicator Committee, Climate Change
Areas of expertise	climate change citizen science
Primary audiences	Coastal communities, municipal officials, lobster fishermen, youth and volunteer citizens interested in monitoring
Recent research	Developing statewide research priorities on ocean acidification (NECAN/Island Institute/Sea Grant), Coastal infrastructure resilience in a changing climate (UMaine/NSF EPSCoR/Sea Grant), Coastal community resilience (NOAA), Adapting to a changing climate in Maine fishing communities (NOAA)
Network activities	Co-chair, National Sea Grant Climate Network NOAA North Atlantic Regional Team



### Dana Morse

Years with Sea Grant	16
Location	UMaine Darling Marine Center, Walpole
Boards & committees	Steering Committee, Maine Food Strategy Coordinator, Shellfish Working Group Section Editor, <i>Mainely Agriculture</i>
Areas of expertise	seafood, shellfish aquaculture, fishing gear and methods
Primary audiences	fishermen, aquaculturists, tourists, seafood consumers
Recent research	Aquaculture in Shared Waters (NOAA Sea Grant), Improved growout methodologies for razor clams (UMaine, Roger Williams University, Woods Hole Sea Grant/Northeast Regional Aquaculture Center), Sea scallop production trials (Maine Sea Grant)
Network activities	Sea Grant Sustainable Seafood Focus Team Fisheries Extension Network





### Kristen Grant

Years with Sea Grant	15
Location	Wells National Estuarine Research Reserve (WNERR), Wells
Boards & committees	Education Committee, WNERR Board of Directors, Workforce Housing Coalition of the Greater Seacoast Steering Committee, Outreach and Education Committee Chair, National Working Waterfront Network Chair, Maine Beaches Conference Steering Committee
Areas of expertise	community planning and development, stakeholder engagement, working waterfronts and coastal access, climate change and coastal hazards adaptation, beach monitoring and management
Primary audiences	municipal officials, coastal community residents, coastal property owners
Recent research	Community climate adaptation initiative (NOAA), Coastal access tools website (National Sea Grant Law Center), Creating community and economic development tools for preserving working waterfronts and waterways (U.S. Economic Development Administration)
Network activities	Sea Grant Sustainable Coastal Development Focus Team, Vice Chair (2010 – 2011), Training Committee Chair (2010 – 2014) Sustainable Coastal Community Development Network, National Weather Service “Storm Teams”



### Paul Anderson

Years with Sea Grant	15
Location	University of Maine, Orono
Boards & committees	Board, Herring Gut Learning Center Board, Maine Fishermen’s Forum Board, Maine Aquaculture Innovation Center Aquaculture Research Institute Advisory Board
Areas of expertise	program management, extension, seafood, renewable ocean energy, water quality, microbiology
Primary audiences	Sea Grant, NOAA, and UMaine staff, researchers, and leadership; Maine resource agencies and research institutions; coastal communities; fishermen
Recent research	Sustainable Ecological Aquaculture Network (NSF EPSCoR), New England Sustainability Consortium (NSF EPSCoR)
Network activities	Sea Grant Association (SGA) Board of Directors, past president Chair, SGA External Relations Committee; partnerships with HI Sea Grant, GA Sea Grant



### Beth Bisson

Years with Sea Grant	8
Location	University of Maine, Orono, and Brunswick
Boards & committees	Coordinator, Maine Marine Invasive Species Collaborative Northeast Aquatic Nuisance Species Panel New England Ocean Science Education Collaborative Gulf of Maine Marine Education Association UMaine K-12 STEM Outreach Network
Areas of expertise	Program management, invasive species, citizen science, water quality, ocean and climate literacy, phenology
Primary audiences	Sea Grant, NOAA, and UMaine staff, researchers, and leadership; Maine resource agencies and research institutions; K-16 formal and informal educators and students; citizen scientists
Recent research	Establishing a Northeast region early detection and rapid response plan for the Chinese mitten crab (National Sea Grant); Maine Marine Invasive Species Collaborative
Network activities	Assembly of Sea Grant Extension Program Leaders Sea Grant Educators’ Network Northeast Region Representative to the Executive Committee of the Extension Assembly NOAA Citizen Science Community of Practice Steering Committee Northeast Regional Sea Grant Meeting Planning Committee



The Communications Team, based at the University of Maine, works closely with the MET and Sea Grant funded researchers to communicate the science behind issues of concern to coastal communities. All of the projects and programs described in this briefing book involved the Communications Team, whether we produced printed materials, websites, blog posts, news releases, etc., or provided communications expertise to staff and partners. In addition to supporting funded researchers and the Marine Extension Team activities, the Communications Team often initiates publications and other communications projects.

## Catherine Schmitt

Years with Sea Grant 10

### Boards & committees

Board of Trustees, Maine Writers & Publishers Alliance

Board of Directors, Somes Pond Center

Board, Maine Atlantic Salmon Museum

Outreach Committee, Working Waterways & Waterfronts National Symposium on Water Access

Outreach Committee, Gulf of Maine Council on the Marine Environment

### Areas of expertise

science communication, writing, editing, digital and online media, public relations



## Kathlyn Tenga-González

Years with Sea Grant 8

### Areas of expertise

graphic design, digital and online media, accessibility



## Jenny Peters

Years with Sea Grant 12

### Areas of expertise

computer hardware and software, web programming and design, digital and online media





**The principles that guide our staff and programs in both daily work and long-term planning are aligned closely with the National Sea Grant Standards of Excellence, and collectively, they make us both unique and essential to diverse stakeholders. Here, we outline the general principles of how we work with stakeholders and provide a few examples of each. Additional examples will be provided during the site visit.**

**We serve as a liaison between researchers and coastal communities.** The Marine Extension Team performs the traditional “extension” function of connecting scientific researchers and coastal stakeholders. Sea Grant research activities are linked with effective outreach and communication strategies. We host conferences and other information-sharing opportunities, coordinate statewide research needs assessments and priority-setting exercises, and support citizen science and education programs that engage participants of all ages in conducting and learning about research that is relevant to their daily lives.

## Examples

In response to increased interest in seaweed for food and other products, and to communicate results of a National Sea Grant-funded kelp aquaculture project, Sarah Redmond and Dana Morse organized a meeting and workshop in 2012 with researchers and members of the Maine Seaweed Council. “The Seaweed Scene” exceeded attendance expectations, garnered significant media attention, and has continued as an annual event, email listserv, and Facebook page. This year the information-sharing part of the day was combined with the new, Maine Sea Grant-sponsored Maine Seaweed Festival in South Portland. Redmond also oversees the newly constructed sea vegetable nursery at the UMaine Center for Cooperative Aquaculture Research, where research and development for culturing new seaweed species are taking place.



Aquaculture companies attempting to integrate shellfish into finfish farming operations face challenges with sourcing supplies of juveniles, or “seed.” After a meeting arranged by Chris Bartlett, Cooke Aquaculture contracted with Downeast Institute for Applied Marine Research & Education for a \$4,000 proof-of-concept study to produce mussel seed. The resulting 15 million juvenile mussels (commercial value = \$40,000) were seeded on ten mussel rafts and deployed around salmon farms in Cobscook Bay. This effort led to a \$400,000 award by NSF to DEI for continued research into hatchery-raised mussel seed.



Alewife and blueback herring migrate from the ocean to spawn in Maine lakes and rivers. Historically, these fish were a source of food in coastal communities; they remain important today as sustenance, as part of cultural heritage activities, and as lobster bait. Federal, state, and municipal leaders work in partnership to ensure that river herring have unobstructed upstream passage. In 2011, the Town of Pembroke’s authority to govern the harvest of river herring was revoked because of failure to meet state requirements. Working with the Maine Department of Marine Resources (DMR), Chris Bartlett began coordinating the required monitoring of river herring in Pembroke, expanding the community’s capacity so that harvest could continue.



**We maintain our focus on applied research and monitoring.** Our role as liaisons allows us to be responsive to emerging issues and gaps in research, outreach, and education services, which often leads to applied research and monitoring programs. When needed, we are capable of helping to sustain these efforts beyond typical grant cycles, which is often the most challenging aspect of applied research and monitoring. MET members often participate as co-investigators or coordinators.

## Examples

Changes in climate are placing pressure on Atlantic fisheries and the communities they support. Using a participatory modeling process, Esperanza Stancioff has brought together local stakeholders in the town of South Thomaston to characterize community vulnerability and identify actions intended to increase the community's ability to maintain marine fisheries and the dependent local economy. This [ongoing NOAA-funded project](#) is in partnership with the Amherst, MA-based Social and Environmental Research Institute and South Carolina Sea Grant, and is supporting a graduate student at the University of Maine.

Coastal beaches are a significant driver of Maine's economy, attracting the majority of tourists in a state where tourism is the largest industry. Unsafe bacteria levels at beaches threaten public health, the environment, and public perceptions of the environment. The [Maine Healthy Beaches Program](#) is funded by the U.S. Environmental Protection Agency, managed by the Department of Environmental Protection, and coordinated by Keri Kaczor. In 2014, a total of 60 beach management areas were routinely monitored by teams of trained volunteers and local staff—park employees, health nurses, fire chiefs, town administrators, and others. Maine Healthy Beaches exceeds federal requirements by also focusing on pollution source identification and the use of innovative methods with an inclusive approach. Working with an advisory committee of many partners and local officials, the program has identified and fixed sources of bacteria polluting beaches, resulting in fewer beach advisories in some areas, re-opened shellfish growing areas for harvesting, restored ecosystems, and local capacity.



Since 2008, Beth Bisson has worked closely with the Schoodic Institute at Acadia National Park and UMaine researchers to develop and support [Acadia Learning](#). The program is addressing the question: How do we integrate citizen science research goals with more targeted formal and informal education goals to address grade-level learning standards and engage participating educators in sustained professional development programs? With support from three grants from the NOAA Office of Education, the program has fostered communities of practice in which educators collaborate to link field-based citizen science research experiences with intensive data literacy studies and improve their teaching practices related to scientific analysis and communication. In 2012, two educators who have been participants in and advisors to the Acadia Learning program since its inception won prestigious awards from the White House Council on Environmental Quality and from National Geographic for their work.





**Our partnerships leverage expertise and funding.** Maine Sea Grant is highly skilled in developing and maintaining partnerships, and collectively, we have decades of experience working with and coordinating small and large teams of collaborators across multiple sectors. We partner to be effective, and because the diversity and depth of issues often extend beyond the technical expertise of our team. We also partner as a way of extending our reach, since there are thousands of miles of coastline between the communities, organizations, and research institutions with whom we work (even though the population is relatively small). In addition, while each individual member of our team has his or her own expertise, they frequently work together to share facilitation and content expertise. The information on leveraged funds, also provided separately, provides additional evidence that partners value our work and trust our team.

## Examples



As coordinator of the revived and expanded [Downeast Fisheries Trail](#) in eastern Maine, Natalie Springuel and partners wanted to ensure that this heritage tourism initiative had local support and input. The 45 “sites” on the trail—from fishing piers, aquaculture facilities, and seafood processing plants to museums and community centers—were selected based on meetings with stakeholders in the local



area and many partners, including the Maine Community Foundation, DownEast and Acadia Regional Tourism, Sunrise County Economic Council, Penobscot Marine Museum, Lobster Institute, Diadromous Species Restoration Research Network, Maine Office of Tourism, and College of the Atlantic. The trail has helped to leverage existing tourism resources and attract new interest to Downeast Maine, where tourism provides economic development opportunities.



Natalie Springuel currently co-manages, with Dana Morse, a project focused on overcoming legal barriers to collaboration among and between commercial fishermen, aquaculturists, and tourism providers. Springuel and Morse mobilized key collaborators, and identified an appropriate source of extramural funding (the National Sea Grant Law Center). Legal research was then translated into workshops, a series of fact sheets, and web content. According to participants, they have used information on topics such as insurance and liability, permitting, licensing, and contracting in developing plans to augment their business portfolios and income.



As the U.S. expands aquaculture development and existing farms reach capacity, competing uses will encourage aquaculture to locate farther from shore. But questions remain about capacity, operating costs, risks, and market response. Maine Sea Grant provided \$600 in Program Development funds to support an Offshore Mussel Farming Workshop in Sheldon, CT in February 2011. The organizers received an additional \$3,600 from other members of the Northeast Sea Grant Consortium, \$3,600 from the Northeast Regional Aquaculture Center (NRAC) and \$1,400 from the Canadian Consulate. Following the workshop, four fishermen in RI and MA completed a NOAA-funded research and development project led by the Marine Biological Laboratory. Funding was secured for further research and industry expansion through RI Sea Grant and NRAC. Additional permits were approved to support up to 15 new mussel longlines.

**We are viewed as objective facilitators.** We bring diverse perspectives and skills to our work, and MET members have developed the convening and facilitation skills necessary to make sure the right people are in the room when stakeholders are faced with difficult questions and decisions. The Marine Extension Team is equally comfortable working with historians, real estate agents, charter boat operators, poets, and fishermen, to name just a few, and they are frequently approached by municipal governments and agency staff to help convene and facilitate highly-charged public processes.

## Examples

In 2013, Paul Anderson worked with leaders in the soft-shell clamming industry, agency staff, and researchers to respond to an unprecedented rise in the invasive European green crab, a predator of the soft-shell clam, which supports one of Maine's most valuable commercial fisheries. Anderson coordinated Sea Grant's involvement in a statewide green crab population density survey led by the Department of Marine Resources in August 2013, and chaired the organizing committee for a December 2013 [Maine Green Crab Summit](#). The summit gathered more than 600 industry, agency staff, researchers, students, and other stakeholders, in person and online, to exchange information about green crabs and their impacts on Maine's coastal and marine resources, learn about different approaches for green crab control, and discuss future directions for management and research. Since then, Maine Sea Grant has supported several green crab-related applied research and monitoring projects, and Anderson and other Sea Grant staff remain engaged in this issue.



The brown seaweed known as rockweed (*Ascophyllum nodosum*) dominates Maine's rocky shorelines. A recent increase in commercial harvest has led to conflict with other uses and values of the coast. At DMR's request, Sea Grant hosted a rockweed science forum in 2010, and the agency again turned to Sea Grant for assistance in 2013 when the Maine Legislature charged them with creating a fisheries management plan for rockweed. Sarah Redmond and Chris Bartlett facilitated meetings of the development team (including representatives from Acadian Seaplants, Maine Coast Heritage Trust, North American Kelp, Ocean Organics, Source Inc., The Nature Conservancy, University of Maine at Machias, University of Maine) and provided guidance on procedures for respectful collaboration and decision-making. The [Fisheries Management Plan for Rockweed](#) was completed in January 2014.



As demand increases for coastal living in proximity to Boston, southern Maine "Seacoast" communities are experiencing development pressure and rising home prices. To build the capacity for coastal communities to plan for future housing needs, Kristen Grant has worked with the Workforce Housing Coalition of the Greater Seacoast and the U.S. Environmental Protection Agency to engage residents in the Maine Seacoast communities of Kittery, Wells, and York in [neighborhood-scale planning](#). Grant led implementation of charrettes from 2010 to 2014, and participating towns are now planning for workforce

housing, zoning changes, and other developments. The charrettes generated enthusiastic support from local businesses and employers who recognize the need for housing affordable to their workers. These businesses have become the primary sponsors of the charrettes.





**We provide professional training to build the capacity of our partners.** Maine Sea Grant is one of the older marine science and education organizations in Maine. One way in which our 40 years of experience benefits stakeholders is through capacity building. Through leadership on boards, steering committees, and other advisory roles, we provide organizational development and management support for individuals and groups throughout the state, and develop and implement professional training programs for stakeholders. Many of our partners have begun to use “Sea Grant-like” approaches in their own work. We also believe in expanding our own capacity in order to stay relevant, encouraging staff to gain new skills and take advantage of professional development opportunities.

## Examples

In Spring 2014, Kristen Grant offered a comprehensive training series in facilitation skills to communities in the Saco Bay region. The curriculum “[Strengthening Your Facilitation Skills](#)” was created by UMaine Cooperative Extension, but not offered in southern Maine due to limited staffing. Grant leveraged Cooperative Extension’s financial, professional, and material resources to build a program for southern Maine, with a particular focus on municipal board and committee members in order to improve their effectiveness. Grant hopes to create regional teams of trained facilitators who can provide volunteer facilitation services within the region.



The lobster industry in the Northeast has suffered due to low prices for the product, and faces several challenges in improving industry practice and competitiveness. Dana Morse coordinated the implementation of the [USDA’s Trade Adjustment Assistance program for the Northeast lobster fishing industry](#), working with the Farm Service Agency and University of Minnesota’s Center for Farm



Financial Management, Massachusetts Lobstermen’s Association, Maine Lobstermen’s Association, Northeast Center for Risk Management Education, Penobscot East Resource Center, and the Northeast Sea Grant programs. Morse coordinated design, creation, and implementation of several workshop topics, and contributed significantly to the delivery of relevant business training, and technical and financial assistance to more than 2,000 lobstermen in Maine, and 4,000 in the region.



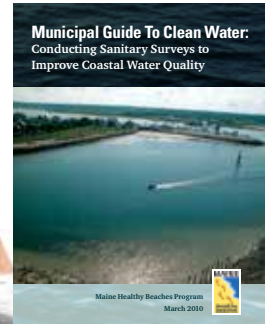
[Herring Gut Learning Center](#) in Port Clyde provides place-based marine science education to students of all ages. Their signature program serves at-risk middle school students from the local area, providing experiential learning opportunities through aquaculture, aquaponics, and a saltwater marine laboratory. A nonprofit organization, Herring Gut relies on a volunteer Board of Directors, grants, and local philanthropy to oversee the strategic direction and to fund the programs. Paul Anderson chaired the board from 2011-2014 and has provided advice, leadership and organizational development skills to advance the Board and the Center, and to establish mechanisms to support the organization into the future. Herring Gut Learning Center now has solid staffing, a growing and functioning Board of Directors, and strong partnerships with the local school districts. The center diversified fundraising to meet its goal of \$300,000. Graduates of the program are more likely to continue and complete high school, and many of them have made surprising and inspiring transformations in their academic and social skills thereby allowing reintegration into the student body.



**We are a trusted source of science-based information.** Maine Sea Grant has a long history of science communication practice and a reputation for high-quality publications. Many of our older reference documents and handbooks continue to be useful to stakeholders and therefore require periodic revision. Other publications—YouTube videos, online guides, Facebook pages—emerge out of new information needs and are designed to fit with modern media consumption habits. MET and communications team staff monitor social media and website analytics to identify stakeholder information needs and trends, and adjust communication strategies accordingly. Continued requests from partners for help with publications, and the continued relevance of Sea Grant “classics” are testament to the value of our information services.

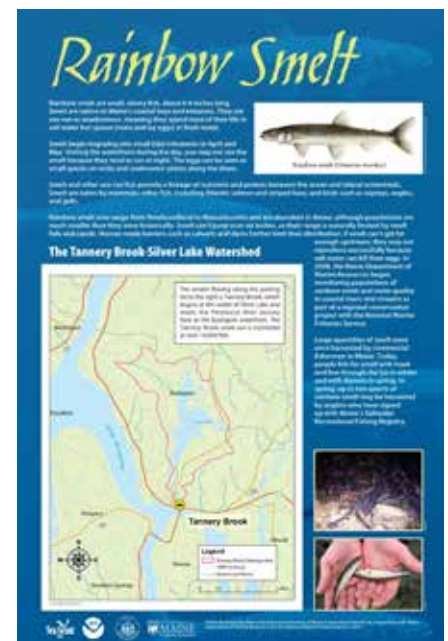
## Examples

To share lessons learned from her years of working at the community level to keep beaches clean, Keri Kaczor worked with the Communications Team to produce the 72-page *Municipal Guide to Clean Water: Conducting Sanitary Surveys to Improve Coastal Water Quality*. The guide has been requested by more than 50 Maine communities, eight state/federal agency partners, and 14 states. Kaczor developed training modules based on the guide for webinars by the Center for Watershed Protection and EPA; EPA incorporated the guide into the national marine sanitary survey. The guide has been used by health departments in New York, Pennsylvania, Washington, and Connecticut to direct ongoing enhanced pollution monitoring and source-tracking efforts.



Maine Sea Grant developed the *Maine Seafood Guide* as a neutral source of science-based information on nearly 40 marine species harvested, sold, marketed, or traditionally consumed as “seafood” in Maine. The guide collates information on species regulated at federal, state, and local levels as a service to the consumer of Maine seafood. The guide was reviewed by 20 experts from a variety of organizations, including the National Marine Fisheries Service and the Maine Department of Marine Resources, and continues to be the most frequently visited section of our website.

Maine Sea Grant’s Communications Team worked with NOAA Fisheries’ Northeast Fisheries Science Center Orono Field Office to produce content for *educational kiosks* in the Penobscot River Watershed, including information on water quality, rainbow smelt, fishing history, river facts, and other topics. NOAA Fisheries staff subsequently requested our assistance with outreach related to dams and dam removal, and in 2014 this partnership was formalized through NOAA’s Penobscot River Habitat Blueprint, in which we will be working with the Orono Field Office, the NOAA Restoration Center in Gloucester, MA, and The Nature Conservancy to conduct outreach on migratory fish species, fish passage, and restoration in the Penobscot River watershed.





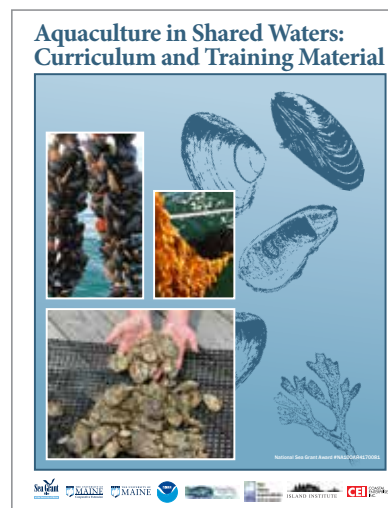
**We provide access to state, regional, and national networks.** Our staff benefit personally and share with partners and stakeholders the many benefits of their engagement in state, regional, and national professional network activities. These include the Sea Grant Network and its issue-focused working groups, as well as the broader NOAA community, state and national networks of Cooperative Extension professionals, research scientists, commercial fisheries and aquaculture industry associations, science writing and communications networks, etc. Our approach to networking has always been that we have a responsibility as public servants to stay engaged and use our access to gain and share information.

## Examples

Uncertainty in commercial fishing has led a number of Maine fishermen to consider aquaculture as a means to diversify their incomes. Working with UMaine researcher Teresa Johnson, Maine Aquaculture Association, Maine Aquaculture Innovation Center, Coastal Enterprises Inc., and the Island Institute, Dana Morse and Sarah Redmond helped design and implement the 2012-2014 National Sea Grant-funded [Aquaculture in Shared Waters](#) project, piloting a comprehensive aquaculture training program in two communities.



To date, one new farm was started by a fisherman/student of the course, with two others in process. In addition, the work has stimulated interest from additional communities, with a course offering being planned in the Casco Bay region for late 2014/early 2015.



Esperanza Stancioff represents Maine Sea Grant in the [Northeast Coastal Acidification Network](#) (NECAN) of scientists, federal and state agency representatives, resource managers, and industry partners dedicated to coordinating and guiding regional observing, research, and modeling to better identify and communicate vulnerabilities, particularly with respect to important marine resources. Since November 2013, NECAN has sponsored a series of 16 webinars on topics related to regional coastal and ocean acidification.

Maine is among multiple Sea Grant programs that helped to create the [National Working Waterfront Network](#), an outcome of the 2007 and 2010 Working Waterways and Waterfronts National Symposia on Water Access, hosted in Virginia and Maine, respectively. In 2011, the U.S. Department of Commerce Economic Development Administration entered



into a \$533,000 cooperative agreement with Maine Sea Grant, National Sea Grant Law Center, Florida Sea Grant, Virginia Sea Grant, Island Institute, Coastal Enterprises Inc., Urban Harbors Institute at UMass-Boston, National Marine Manufacturers Association, NOAA, and the Maine Coastal Program to develop and launch the *Sustainable Working Waterfronts Toolkit*, including results of research on historic and current uses of waterfront space, the economic value of working waterfronts, and legal, policy, and financing tools that can be used to preserve, enhance, and protect these valuable areas.

The toolkit was released at the third National Symposium on Water Access, coordinated by Washington Sea Grant with assistance from Maine Sea Grant and others.

## Additional Collaborative Sea Grant Network and NOAA Activities

Since our last review, we have been successful in competing for funds from the National Sea Grant Program, with five project awards from aquaculture-focused National Strategic Initiatives and another five projects supported with additional grants, including several focused on climate change adaptation.

We have at least 20 projects, completed or ongoing, that involve multiple Sea Grant programs. These include research, extension, and education projects.

Cooperative approaches to resolving coastal access issues are needed by local stakeholders. With funding from National Sea Grant Law Center, Kristen Grant and Natalie Springuel worked with the University of Maine School of Law, as well as state and nonprofit partners, to conduct legal research and communicate the findings via [accessingthemaine.coast.com](http://accessingthemaine.coast.com). The site provides tools to facilitate cooperative resolution of coastal access issues at the local level. In 2013, Texas and Florida joined five other states that have adapted the Maine resource, contributing to Sea Grant's position as a leading source of coastal access information.

We invited staff from the National Weather Service (NWS) and the NOAA North Atlantic Regional Team to attend our January 2013 Policy Advisory Committee meeting. Before the day was done, meetings were being arranged between NWS staff and marine science faculty at UMaine to discuss sensor technologies and the potential expanded use of the NERACOOS buoy system in the region. Other follow-up meetings have taken place between NWS staff and Maine Sea Grant's Marine Extension Team members to discuss current programs related to climate change and initiate conversations about new partnerships. Three pre-proposals and a successful full proposal to the Maine Sea Grant research competition included regional NWS involvement, and MET staff are "Weather Ready Nation" ambassadors.



Chris Bartlett assisted staff of the National Weather Service Caribou Office with a survey and two focus groups to assess how mariners use existing NWS products and services. Participants were asked what ideas they have for new forecasting tools that would improve boating safety. These efforts resulted in improved access to existing NWS online forecasting services, including marine-specific information on the NWS-Caribou Facebook page. Sea Grant also hosted NWS staff to speak at the 2014 Maine Fishermen's Forum on their wave run-up study in Maine and New Hampshire that is assessing the impacts on flood-prone coastal areas.



Esperanza Stancioff is part of a team of NOAA and Sea Grant representatives targeting local municipal officials in the North Atlantic region to provide them with real-world examples from other towns and counties' efforts to increase resilience to hazards, including sea-level rise, inundation, flooding, and storm surge. Four towns in each state from Maine to Virginia have been interviewed about adaptation actions, results, and costs. The [project](#) is funded by a NOAA North Atlantic Regional Team and Sea Grant Collaboration Grant.

Community Supported Fisheries (CSFs) have grown dramatically in number and size on a national scale, but this growth has come with a variety of technical barriers and questions about their long-term viability. Maine Sea Grant provided financial and planning support for the [National Summit on Community Supported Fisheries](#), organized by New Hampshire Sea Grant, which brought together 75 CSF organizers, fishermen, and community leaders to explore the challenges and opportunities associated with the emerging model.

Six commercial fishermen lost their lives in the Quoddy region of Maine and New Brunswick over a 13-month period with a total of 14 deaths during a six-year span. The majority of these men were engaged in dragging for scallops and sea urchins in Cobscook Bay, Maine, where 22-foot tides create strong currents that can be hazardous for fishing. Maine Sea Grant worked with the NOAA survey crew mapping the area, and we provided project development funds and staff coordination for U.S. Coast Guard-approved Fishing Vessel Drill Conductor Certification that provided commercial fishermen in the Cobscook Bay area with the knowledge and skills for emergency preparedness in order to reduce life-threatening accidents at sea.

Sea Grant staff are required to estimate economic impacts and benefits of their programs. This is a challenge for many programs, because of limited staff expertise in resource economics or experience with economic valuation. Funds from the National Sea Grant Office supported temporary professional Katherine Farrow, a resource economist from the University of Maine. Farrow identified potential methods for market and non-market economic valuation of impacts, and created a resource guide and training opportunities for Maine Sea Grant staff. After sharing her findings with the Sea Grant network, Farrow was invited to present at the National Forum on Socioeconomic Research in Coastal Systems.

Lynn Wardwell chairs the Sea Grant Fiscal Officers Network and serves as liaison to the Sea Grant Association. As a member of the National Sea Grant Advisory Council and the Program Mission Committee, Wardwell provides input on issues from the Fiscal Network perspective.

## Program changes resulting from previous review

Maine Sea Grant's 2010 Site Review Team made a number of positive findings, noted several best management practices, and made three suggestions for the program to consider.

The team did not make any recommendations to which we were required to respond, so we chose to continue the strategies and processes they applauded and consider and act upon the three suggestions without submitting a formal response to their report. Since June 2010, we have taken the following actions in response to the three suggestions:

### *1. Fill the vacant Assistant Director for Research position as soon as possible.*

We filled the part-time Assistant Director for Research position in August 2010. Dr. James McKenna, Associate Professor of Marine Biology at Maine Maritime Academy, held the position from 2010 through June 2014. Jim's work was exemplary, and we were sorry to see him go in June. He chose to end his contract with Sea Grant due to increasing demands on his time at Maine Maritime. We recently hired Damian Brady, Assistant Research Professor in the UMaine School of Marine Sciences. His position is supported by dedicated funding from the Office of the University of Maine Vice President for Research.

### *2. Further diversify the PAC membership to include additional private sector representatives involved in commercial and recreational fisheries, charterboat operations, seafood processing, and safety enterprises, as well as resource managers from agencies such as the Northeast Fisheries Science Center, and Atlantic States Marine Fisheries Commission.*

PAC membership has changed since the 2010 Site Review. The table on page 3 shows the overall change in membership. We added representatives from the private sector, including seafood, tourism, marine composites, and ocean energy industries. Commercial fisheries representation was increased, but note that we primarily focus our efforts on state-managed fisheries, which continue to be important at the community level in Maine, rather than federally-managed fisheries offshore, which are addressed by many of our partners.

### *3. More clearly articulate the process used for obtaining stakeholder input and engagement in guiding the program's work and priorities.*

Depending on the scale and timeline of different planning processes we employ somewhat different stakeholder engagement strategies. For example, work planning or priority-setting by individual MET members requires a very different strategy than four-year strategic planning or omnibus proposal development by the whole program. We form our PAC in such a way that members serve as representatives of and liaisons to stakeholder communities associated with the goals and objectives in our current strategic plan. Individual MET members are closely connected with stakeholder communities with whom they work on a day-to-day basis, and for whom they deliver programs, products, and services. MET stakeholder input might be collected through the formation of advisory committees to help guide specific projects or programs, or targeted needs assessment or project evaluation as part of specific grants or program areas.

For longer-term planning efforts, we again rely on our PAC as representatives from/to key stakeholder audiences, and we solicit formal input from them and others at various points during the process. For example, during our last strategic planning process we first surveyed the PAC on the content, breadth, depth, and priorities they wanted to see in our issue areas, goals, and objectives. Their responses informed our internal discussions at a series of staff retreats, and we requested their feedback again on drafts of the plan. We used a similar process for our most recent Omnibus proposal development.

